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## Real estate improvement at the area in-between the new urban...

(tiếp theo trang 24)

cohesive space is a new point. In application, the solution was flexible when affecting each area in order to bring a unique aesthetic, bringing identity value to the area. The synchronous application of this solution contributes to the current urban design research of the street in Hanoi.

- Proposal to establish diversity and share space. The proposed solution has partially solved the problem of limited land fund and is consistent with current manifestations. Shared spaces are established not only for bonding and cultural exchange between communities, but also as physical spaces for establishing transport connections between regions and between means of transport.

The proposed solutions are applicable in deployment in specific cohesive spaces in Hanoi. Creating a friendly space,

improving economic performance, minimizing potential risks of social unrest, contributing to improving the quality of life and real estate. As stated initially, these spaces always appear at the same time as urban expansion and have an increasing number. Therefore, the proposed solution contributes to ensure the sustainable urban development of Hanoi city. On the other hand, with its role as the capital - a large economic center with a high rate of urbanization, the study in Hanoi brings many lessons learned, and it is possible to apply in other cities across the country.

Base on this results, the specific following diagram is shown to synchronize the multi purposes of residents with the aim of improving quality of life./.

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## Architectural characteristics of Thai den ethnic houses in Tram Tau, Yen Bai province

Khuat Tan Hung, Le Duy Thanh

### Abstract

Under the influence of socio-cultural factors and the environment, the housing of the Thai Den ethnic group in Tram Tau, Yen Bai province, has become a symbol of cultural diversity and architecture in the northern mountainous region of Vietnam. Up to now, although architectural features have undergone modifications to adapt to modern life, these structures still reflect the inheritance of long-standing traditional values through identifiable images and spaces serving the daily lives of the Thai Den people. It can be seen that with contributions to the architectural and cultural history treasure of Tram Tau, specifically, and the Northwest region in general, the stilt houses of the Thai Den people play an important role in sustainable development and the continuation of traditional architecture in the area. The article employs investigative methods, current situation surveys, historical investigations, and comparative methods to identify architectural characteristics of Thai Den ethnic houses in Tram Tau in relation to Thai ethnic houses in the Northwest region in general.

**Key words:** Thai Den ethnic houses, Yen Bai, ethnic architecture, ethnic culture, stilt house

### 1. Introduction

Tram Tau, a district nestled in the Northwestern region of Vietnam, amidst towering mountain ranges, creates a majestic and distinctive natural landscape. It not only bears witness to numerous significant historical events but also holds a treasure trove of Vietnam's cultural heritage. With a diverse population comprising various ethnic groups such as the Hmong, Thai, Khơ Mú, Tay, Muong, and Kinh, it paints a vibrant picture of ethnic cultural and architectural diversity. Among these, the Thai Den ethnic group constitutes a significant proportion, and their houses still retain deep-rooted traditional architectural characteristics, becoming emblematic of this region.

Until now, there have been limited studies on the architectural aspects of Thai ethnic houses, primarily conducted by ethnographers such as Nguyen Khac Tung, Vuong Trung, Cam Trong, Lo Cao Nhum, and Tong Van Han. Vuong Trung's book "Traditional Stilt Houses of the Vietnamese Thai" contextualizes the Thai Den stilt houses in Thuan Chau, Son La, describing the rituals, customs, traditions, and activities related to the houses (for both Thai Den and Thai Trang), focusing more on ethnographic aspects while briefly covering architectural content. Cam Trong's book "Understanding the Thai People in Vietnam" also mainly describes the layout and activities inside the stilt houses of Thai Den in Thuan Chau, Son La, and Thai Trang in Ky Son, Nghe An. Meanwhile, Tong Van Han's "Construction Process of Ancient Stilt Houses of the Thai Den People in Muong Thanh, Dien Bien Province" primarily discusses the construction steps and rituals related to the building process and completion of the houses. Nguyen Khac Tung's "Traditional Housing of Vietnamese Ethnic Groups" provides more detailed information on the architecture of Thai ethnic houses (including both stilt houses and ground houses), distinguishing between Thai Den and Thai Trang, but is limited to a few houses in Muong La, Son La, Muong Lay, Lai Chau, and Con Cuong, Nghe An. In the architectural community, the Vietnam Association of Architects' book "Folk Housing in Vietnamese Rural Areas" presents architectural drawings of some stilt houses of Thai Den in Son La, including floor plans, sections, and elevations, but lacks in-depth analysis and interpretation of their architectural characteristics [1-7]

Overall, these studies provide a general overview of the traditional architectural aspects of the Thai people in Vietnam. However, empirical surveys reveal that while there are similarities in the architecture of Thai Den and Thai Trang houses, there are also significant differences alongside these similarities. Even within each branch of the Thai ethnic group, there are many variations in different regions (potentially influenced by natural conditions, cultural interactions with other ethnic groups, or adaptation to societal changes and new needs). These differences contribute to the diversity within the unity of traditional Thai ethnic architecture—a topic that requires further exploration. Therefore, in-depth research on the architectural characteristics of Thai houses in different locations/regions is essential and meaningful, as it can help identify local specificities and contribute to completing the unified picture of Thai architecture in Vietnam.

To systematically fill in the gaps regarding the architecture of Thai houses, this article aims to delve deeply into the architectural characteristics of Thai Den houses in one of the regions with a significant Thai Den population that has received limited research attention: Tram Tau, Yen Bai.

### 2. Research methodology

To achieve the stated objectives, the research team conducted multidimensional research methods, including investigation and current situation surveys, historical

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Date of receipt: 9/4/2024  
Editing date: 22/4/2024  
Post approval date: 04/11/2024





Figure 1. The overall layout of a residential area of the Thai ethnic group in Lừ 2 hamlet, Hát Lừ Town, Tram Tau



Figure 2. Survey of a Typical House in Hát Lừ Town



Figure 3. Lừ 2 hamlet, Hát Lừ town, Tram Tau

investigations, comparative methods, cross-referencing, analysis, synthesis, etc. The research scope was Hát Lừ Town, Tram Tau, which is part of the Muong Lo area, considered the origin of the Thai Den people in Vietnam. With over 3000 households, predominantly Thai Den, Hát Lừ still preserves many traditional cultural characteristics of the Thai people, including housing construction customs. The research process followed these steps: Collecting existing research materials → Surveying, measuring, historical investigation → Analysis, comparison, evaluation → Conclusion, with the survey conducted in March 2024.

The selection of survey sites was based on the following criteria:

- Historical age: The surveyed structures were built and used by Thai families for at least two generations.
- Architectural characteristics: The structures retained distinctive features in form and internal structure of the Thai ethnic group.
- Cultural characteristics: Internal functions may have

undergone transformations, but fundamentally still respect and inherit the traditions of the Thai Den ethnic group in Tram Tau.

Through exchanges with local residents, the research team selected three typical houses from the households of Mr. Lò Văn Chiến, Mr. Lò Văn Sương, and Mr. Lò Văn Thuận in Lừ 2 hamlet for in-depth research and survey.

During the process of measuring the current situation and conducting historical investigations, sociological interviews were also conducted. The questions were designed to understand the cultural traditions, daily habits, and beliefs of the Thai Den people about their homes in general and specific usage spaces, as well as the tradition of building houses and the continuity of traditions. This approach aims to gain deeper insights into the traditional history and views on housing of the Thai Den community in this locality, while identifying factors of change due to adaptation to new needs and conditions.

### 3. Research findings

#### 3.1. Overall Characteristics

Generally, the overall layout characteristics of the Thai Den ethnic houses in Tram Tau reflect harmony with the surrounding natural landscape. The most important factor is not the orientation of the houses but rather the close connection with the terrain and the relationship with neighboring houses. In the village as a whole, houses are built in a harmonious layout, suitable for the land, and integrated with the surrounding mountainous landscape according to the principle of "following the mountains, gathering water."

In the layout of the house site, there is careful consideration and rational arrangement between functional blocks. The main house block is considered the center, with auxiliary spaces such as toilets, water tanks, and animal pens arranged logically around it to meet the family's living and production needs. This combination not only reflects the accumulated knowledge and folk experience passed down through generations but also demonstrates the deep interaction between people and their living environment. Separation from the surrounding space is achieved through simple fences, with many houses having no fences at all. The gardens around the house are quite rudimentary and receive little attention or care. Figure 17 provides a visual and detailed depiction of a typical Thai Den house' plan in Tram Tau, illustrating its integration with the surrounding landscape such as the sloping approach to the house (to connect with the terrain), auxiliary functions like toilets, water tanks, and animal pens situated on both sides of the house to create ventilation for the ground floor space and connection with the surrounding landscape.

#### 3.2. Architectural Layout and Space Characteristics

In terms of plan organization, the houses have a rectangular shape with the long side as the main facade,

and the most common type of house is the 5 Gian house ("Gian" refers to the space between two rows of columns along the longitudinal direction of the house), consisting of 3 main Gian (hông tổ) and 2 Chải (hông tụt) ("Chải" is the term for the "Gian" located under the secondary roof) under the as shown in Figure 19. However, there are also houses of very large dimensions, up to 9 Gian (7 main Gian and 2 Chải) like Mr. Lo Van Lanh's house in Luu 1 hamlet. In the belief of the Thai Den people, odd numbers play an important role, manifested in various aspects such as the number of house bays, stairs, doors, roof rafters, etc. They believe that odd numbers represent movement and development, while even numbers symbolize tranquility and immobility[8]. However, nowadays in Tram Tau, alongside houses with odd numbers of bays, houses with even numbers of bays are also found, such as Mr. Lo Van Chien's house with 6 Gian (4 main Gian and 2 Chải), or Mr. Lo Van Thuan's house with 4 Gian (2 main Gian and 2 Chải) (Figure 17, Figure 18).

The staircase leading to the second floor is usually located in the "hông tụt" Gian, completely enclosed within the space between the main and secondary columns. In recorded documents, Thai Den stilt houses typically have two types of stairs: "Đay Chan" stair and "Đay Quàn" stair, with the number of steps ranging from 5 to 9. The "Đay Quàn" stair is usually for men and have 7 steps, while the "Đay Chan" stair is mainly for women but can also be used by men, typically having 9 steps [4, 5]. However, in present-day Thai Den stilt houses in Tram Tau, there is only one "Đay Chan" staircase with 11 steps. The increase in the number of steps is to create a more spacious area under the floor (with a height of about 2.3m) to meet the family's living needs. The size of the staircase is also much larger, occupying the entire width of the Gian. This change reflects not only an architectural variation but also a somewhat more equal relationship between men and women and adaptation



Figure 4. The front façade of Mr. Lo Van Thuan's house...



Figure 5. The rear façade of Mr. Lo Van Thuan's house...



Figure 6. The front facade of Mr. Lo Van Suong's house



Figure 7. The rear facade of Mr. Lo Van Suong's house





Figure 8. The details of column footing



Figure 11. The measuring rod rests on the roof ridge beam



Figure 12. Stove and kitchen loft



Figure 9. Decorations on the handrail and upper beam of the staircase leading to the house



Figure 13. The protruding section on the rear wall (upper half)

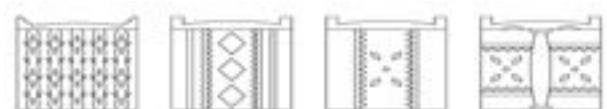


Figure 15. Some decorative patterns in the architecture of Thai Den ethnic stilt houses in Tram Tau

to modern contexts and needs. Instead of being used for storing agricultural tools or housing livestock/poultry as before, the ground floor space can now be used for family activities, hosting guests, or even enclosed to create new usable spaces [9].

According to traditional customs, the two ends of the Thai Den people's houses have two doors called "Chan" and "Quản" (corresponding to the "Đáy Chan" stair and "Đáy Quản" stair), and the house is divided into two parts - the upper half (rear) and the lower half (front) - by a corridor connecting the two doors "Chan" and "Quản". In terms of function, the upper half is where the ancestral altar is located and where the family members sleep, while the lower half is used for cooking, hosting guests, and family activities such as eating and handicraft work. Depending on the size of the house, there may be 1 or 2 stoves. If there is only one



Figure 10. The structure of Column - cross beam - horizontal beam



Figure 14. The structural frame system of the stove on the floor

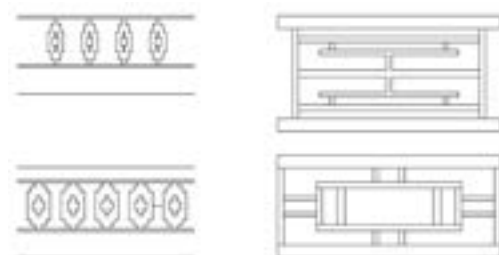


Figure 16. Decoration on the roof truss and window railing

stove, it is usually located near the "Chan" door, facilitating the movement and arrangement of daily activities [2, 4, 5]. Most of these principles continue to be observed in the stilt houses of the Thai Den people in Tram Tau as depicted in Figure 23. The upper half of the house is the place for the ancestral altar and the sleeping area of the family members. Starting from the "Quản" door, the first Gian is usually the ancestral worship area, followed by the bedrooms of the homeowner and family members. These bedrooms are divided in a traditional manner by columns and horizontal beams and curtains, creating a sense of spaciousness and openness due to the absence of permanent partitions (Figure 24). The lower half of the house remains the common living area, for hosting guests, but the kitchen has been separated into a separate block located near the "Chan" door. The "Chan" door becomes the main entrance of the

house. The "Quản" door still exists but has become a door leading to the balcony, as in Mr. Lo Van Suong's house or Mr. Lo Van Chien's house, or even just a symbolic feature, as in Mr. Lo Van Thuan's house.

### 3.3. Structural and Material Characteristics

In terms of structure, the stilt houses of the Thai Den people in Tram Tau primarily consist of 4 sets of legs, with each set comprising 2 main columns and 2 secondary columns arranged symmetrically. Previously, the houses of the Thai Den people had two types of columns: buried columns (Hườn Phẳng Đin) - which is also the oldest type of house, and supported columns (Hườn Tó Ký) [4]. However, nowadays in Tram Tau, there are no longer any buried column houses, and the predominant type is supported columns (Figure 8). The supporting legs are made of concrete or stone, similar to Vietnamese houses. The structure of the stilt house today is mainly of the Khay Đĩnh type following the principle of rafters - columns - beams (Figure 21). Unlike the mortise and tenon method used by the Kinh people, the Thai Den people have a simpler method, using beams

inserted through drilled holes in the main columns, creating a solid and stable connection system.

The spacing between Gian (Gian width) is usually about 2.7m, and the spacing between columns within one "Vi" set (column width) is about 2.5m. The columns have a square cross-section with a base size of about 20cm and tapering smaller towards the top, with the column top measuring about 15cm. Made from good-quality timber, these columns have the ability to withstand heavy loads, along with a certain degree of flexibility and elasticity to endure environmental changes. The columns are drilled to connect with rectangular cross-section beams (cross and horizontal beams), measuring about 7x18cm. This not only creates a unified wooden structural system but also ensures the stability of the house against weather conditions and the environment.

In terms of construction materials, in the past, the stilt houses of the Thai Den people primarily used natural materials such as wood, bamboo, thatch, and leaves. Among these, wood was used to build the main structural



Figure 17. First floor plan (Mr Lo Van Thuan house - Lưu 2 hamlet, Hát Lừu Town, Tram Tau district)

Ghi chú:

- Space under the floor (open space)
- Sanitary space
- Wc + bathroom
- Water tank
- Livestock pens

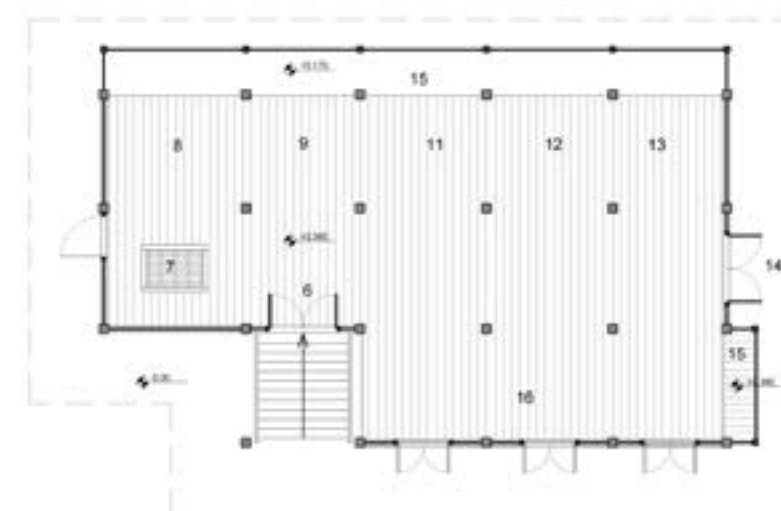


Figure 18. Second floor plan (Mr Lo Van Thuan house - Lưu 2 hamlet, Hát Lừu Town, Tram Tau district)

Note:

- "Chan" door
- Stove
- Kitchen Utensils and Appliances Space
- Living room
- Daughter's bedroom space
- Son's bedroom space
- Homeowner's bedroom space
- Ancestral worship space
- "Quản" door
- Cantilever extension space
- Common space



frame and was typically prepared 3 to 5 years before construction. The selected wood species were usually high-quality types like ironwood, camphor, and teak. It was avoided to use dead or decayed wood, as it was believed that these could bring bad luck to the homeowner. The best quality and sourced wood ensured durability and brought good fortune to the household [1, 8, 10]. Presently, the stilt houses of the Thai Den people in Tram Tau still predominantly use wood as the main material for framing, flooring, and wall covering, while bamboo, thatch, and leaves are hardly used anymore. Columns, rafters, and beams are usually made from acacia (tràm) and fokieni (Pơ mu) wood, while flooring boards are made from Ford – Manglietia fordiana (dổi, de), and fokieni. Wall panels are typically made from markhamia stipulata seem wood (Đinh) or Ironwood (Lim). The floorboards are laid horizontally across the house. The floorboards are typically 3-4cm thick and are as long as one Gian (~2.7m). The joints between the floorboards are beautifully crafted, creating a sturdy surface that does not produce noise during use. In addition to wood materials, many houses also use artificial materials such as concrete and bricks, especially for auxiliary areas like kitchens and bathrooms. As for the roof, it is mainly covered with fiber cement sheets.

#### 3.4. Architectural Form of the House

The architectural form of the stilt houses of the Thai Den people in Tram Tau is distinctly divided into three parts: the first floor - the Base (>2m), the second floor - the Body (~2m), and the Roof (~2.4m). The total height of the house is approximately 7m, with the Base and Body parts representing the authentic frame structure (columns, rafters, wooden walls) with a system of double-winged windows close to the floor. Windows only appear on the front facade of the house (lower half), never on the rear facade (upper half). On the Body part, the main facade of the house is emphasized by the rhythm created by continuous vertical window panels, while the rear facade consists of simple wooden walls, completely devoid of decoration. The transoms of the windows are typically designed to be about 60cm high and feature a variety of decorative patterns, reflecting the creativity of local artisans. The total number of windows and doors is always odd, following traditional beliefs.



Figure 21. Typical cross section

The most prominent feature on the facade is the Roof. The roofs of the stilt houses of the Thai Den people in Tram Tau usually have four sections, with two main roofs running along the length of the house (referred to as "Tô") and two small roofs covering the two Chái (referred to as "Tụp"). According to reminiscence research, previously the stilt houses of the Thai people in Tram Tau were mainly of the curved roof type resembling a tortoise shell (known as "Hườn Tụp Cống") with "Khau cút" - the decoration symbol ends at both ends of the roof, but nowadays this type of house no longer exists. When repairing or rebuilding houses, people have switched to the flat roof type (known as "Hườn Tụp Lặt") without "Khau cút". This phenomenon is not only observed in Tram Tau but also in most areas where the Thai Den people live.

#### 4. Conclusion

The residential architecture of the Thai Den people in Tram Tau bears the characteristics of Thai house architecture in general, as evidenced by the following points:

Overall characteristics and house positioning: primarily based on the topography and mountainous terrain without following a specific orientation.

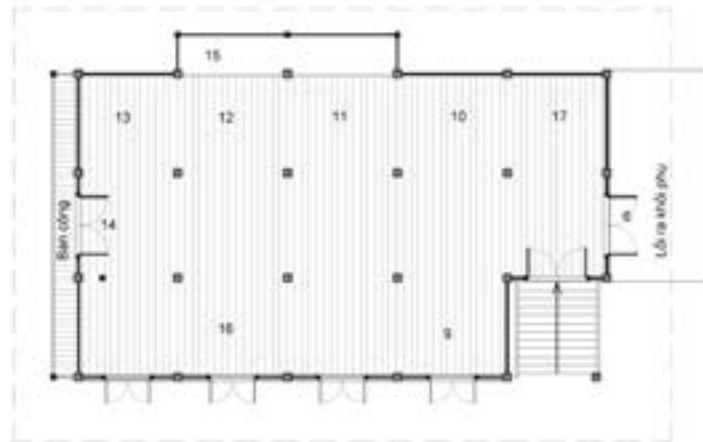


Figure 19. Second floor plan (Mr Lo Van Suong house - Lưu 2 hamlet, Hát Lừu Town, Tram Tau district)

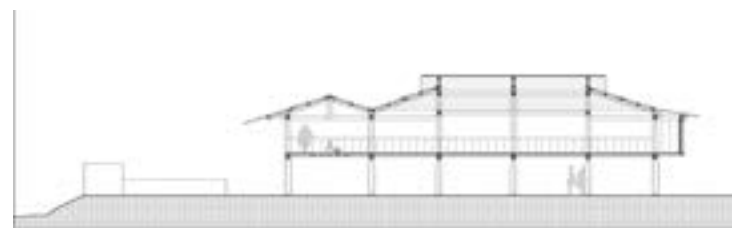


Figure 20. Longitudinal section (Mr Lo Van Thuan house)

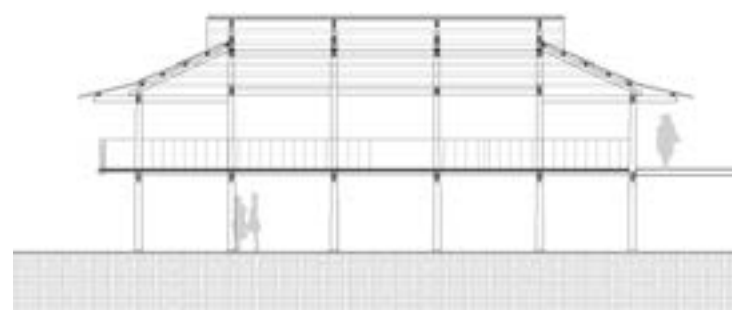


Figure 22. Longitudinal section (Mr Lo Van Suong house)



Figure 23. "The common layout method for space utilization on the second floor of the Thai Den stilt house in Tram Tau"



Figure 24. Interior inside Mr Lo Van Suong house

Layout and architectural space characteristics: arrangement and division of space adhere to traditional principles, emphasizing the role of men within the household.

Structural characteristics: mainly utilizing the Khay Đìeng type of framing in a column-beam-rafter system, which is a traditional structure of the Thai Den people.

Architectural form: a raised floor house comprising three distinct parts - base, body, and emphasized roof section.

However, the stilt houses of the Thai Den people in Tram Tau also exhibit unique features, reflecting indigenous traditions and adaptation to new needs and conditions, including:

No longer are there houses with buried pillar style (Hườn Phẳng Đin) as before; primarily, there are pillar-supported houses (Hườn Tó Ký).

The curved turtle shell-shaped roofs (Hườn Tụp Cống) are no longer present, only flat gabled roofs remain (Hườn Tụp Lặt).

Presence of both odd and even-numbered bay houses.

Raised ground space adapted to new usage needs, altering the proportion between the base, body, and roof of the house.

Decrease in the prevalence of the Đay Quán staircase in favor of the larger Đay Chán staircase, which typically consists of 11 steps and spans the entire width of one Gian.

Separation of the kitchen from the main living space into a separate block, connected to the main house through Chán door.

Disappearance of the roof decoration (Khau cút).

In summary, the residential architecture of the Thai Den people in Tram Tau shares common characteristics while also possessing unique features that contribute to the diversity within the unified architectural tradition of the Thai people in the Northwestern region of Vietnam. These architectural legacies are valuable and should continue to be preserved, promoted, and passed on to future generations./

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